**Updating Visual Studio 6.0 optimizations to Visual Studio 9.0**

Visual C++ 2008 Express (9.0) can be downloaded from: <http://www.microsoft.com/express/Downloads/#2008-Visual-CPP>

General Information:

* There are 3 folders within the optimization folder:
  + **acpp**: project that replaces acpp.lib; contains general purpose routines for parsing input files
  + **src**: contains the source code files (and header files) for the Simann project
  + **Simann**: contains the Simann project and the Simann solution files
* All input and output files need to be in the root optimization folder
* Simann.sln (in the Simann folder) is the solution that needs to be opened in Visual Studio 9.0 for code editing and compiling

Steps for update:

* Copy all .c, .cpp, and .h files from Visual Studio 6.0 folder into src folder
* Copy all input files into the root optimization folder:
  + Shoe file
  + Experimental data tracking file, motion file
  + Experimental EMG file
  + Muscle file
  + Joint file
  + forparams.txt
  + SAstartXblock file
  + ParamBounds.dat (if reading parameter bounds from file)
  + regression input file (if using regression)
  + initial states file (if reading initial states from a file)
  + model.sd file (or put in src folder)
* Open solution (Simann\Simann.sln) in Visual Studio 9.0
* Add any extra files to the workspace (i.e., RegressionFuncs.c if using regression functions) by expanding the Simann project tree in the Solution Explorer (right-hand side of screen) and right clicking on “Source Files”. Then select Add…->Existing Item…
* Similarly, delete any files that are not relevant to your simann workspace.
* In SA.h, change the line:

#include <cmath>

to:

#include <math.h>

This will access the C compatible version of the math library in Visual Studio 9.0.

* In formain.c, sdfor.c and system\_params.h, change the definition of BAUMGARTE STAB to:

#define BAUMGARTE\_STAB 20.0

This will avoid an integer/double division bug that was corrected after SIMM 2.0.

* If using regression, in Regression Funcs.c, change the size of the dummy variable in the assign\_regression\_coefficients function from 9 to 10. This will avoid a memory access issue when compiling and running in debug mode.

Optional changes:

* Visual Studio 9.0 is more sensitive to variables that are not initialized (particularly when running in Release mode). Therefore, it would be advisable to build the code (in both Debug and Release modes) and initialize any variables in the Simann project that produce warnings.
* You may also want to reduce the number of warnings by deleting any “unreferenced local variables”.

Compiling and Running

* Compile the code in Debug mode first (select “Debug” from drop down menu next to green arrow) by going to Build->Clean Solution and then Build->Build Solution. This is important for diagnosing any memory errors that Release mode might not catch.
* Run with executable from Debug mode (in root optimization folder).
* Check output motion against version from Visual Studio 6.0.
* Compile the code in Release mode second (select “Release” from drop down menu next to green arrow) by going to Build->Clean Solution and then Build->Build Solution.
* Run with executable from Release mode (in root optimization folder).
* Check output motion against version from Visual Studio 6.0.